PCN93

A COST EFFECTIVENESS ANALYSIS OF 4 CHEMOTHERAPY REGIMENS IN THE TREATMENT OF PLATINUM SENSITIVE RECURRENT EPITHELIAL OVARIAN CARCINOMA

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OBJECTIVES: Compare the cost effectiveness of 4 chemotherapy treatments for platinum-sensitive recurrent epithelial ovarian carcinoma (EOC). **METHODS:** A Markov model was constructed using a hypothetical cohort of 500 women (median age 60) to compare 4 NCCN recommended treatment-regimens for platinum sensitive recurrent EOC: carboplatin/paclitaxel (C/P); carboplatin/gemcitabine (C/G), C/G with bevacizumab (C/G+B); and carboplatin/pegylated liposomal doxorubicin (C/PLD). These treatments were chosen as they are each supported by phase III trials. An indirect treatment comparison methodology was used to obtain evidence of the difference in treatment effects of each regimen. Progression free survival (PFS) and overall survival (OS) data were used for survival comparisons. The time horizon was thirty years. Cost calculations were based on data from Medicare and published literature, and were based on median cycle number from each trial. Published values of health utilities were used for QALY calculations. Cost effectiveness ratios (CER) were calculated for each regimen, and expressed as 3 incremental cost effectiveness ratios (ICER): additional month PFS, month OS, and QALY. Reported rates of grade 3/4 toxicities from each trial were added to the cost of each treatment. Cost, survival, and toxicity rate were varied over a range for sensitivity analysis. **RESULTS:** C/G was a cost-effective regimen. The cost for treating 1 woman with 6 cycles of C/G ranged from $1,140 (no toxicity) to $7,030 (toxicities at the reported rate). Treatment with C/G produced a dominant ICER of $236,318/month-PFS. For each PFS-month gained over the next most cost-effective option, over $200,000 was saved. C/G was the dominant strategy for OS, (ICER=$72,213/month OS). When adjusted for health utility, C/G was the dominant strategy (ICER of $20,443/QALY). **CONCLUSIONS:** C/G was a cost-effective regimen, resulting in a dominant ICER for PFS, OS, and QALY. C/G resulted in a savings compared to the next most cost effective regimen.

PCN94

MOBILIZING AUTOLOGOUS HEMATOPOIETIC STEM CELLS IN PATIENTS WITH MYELOMA: A ECONOMIC COMPARISON OF 4 COMMON MOBILIZATION STRATEGIES

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OBJECTIVES: Autologous stem cell transplantation (ASCT) is an integral part in the management of Multiple Myeloma (MM), the 2nd most common blood cancer. The collection of self stem cells – mobilization is required for ASCT. The optimal approach to procurement of stem cells remains debatable, with multiple competing clinical, cost and transplant-centre factors. In order to rationalize a preferred collection strategy we sought to perform a cost-effectiveness analysis from a Funder's perspective of 4 common mobilization strategies used in Canada: Cyclophosphamide/G-CSF (Strategy 1), G-CSF alone (Strategy 2), Upfront-use of Plerixafor (Strategy 3), and "Just-in-time" use of Plerixafor (Strategy 4). **METHODS:** Clinical data was derived from published systematic reviews, randomized trials and observational studies. Further, a local audit was performed to evaluate external validity of the published data. Costing data for SC collection and adverse events were derived locally, The Ottawa Hospital. All unsuccessful 1st attempts with each strategy were assumed to be followed by plerixafor re-mobilization. Probabilistic sensitivity analysis around costs and collection probabilities were varied simultaneously across their plausible range of values using Monte Carlo simulations (MCS). **RESULTS:** Successful collection rates were 94.5%, 88.3%, 97.8% and 98.0% respectively for Strategies 1-4, with rates of adverse event of febrile neutropenia of 25.7%, 0%, 0% and 0%. Costs/patient were estimated as $8649, $9098, $17,309 and $13,119 respectively. Strategy 1 dominated strategy 2 in terms of cost and successful mobilization. The incremental cost per successful mobilization was $137,000 for strategy 4 vs. 1 and $1.6 million for strategy 4 vs. 3. MCS found that the probability that strategy 4 was most successful was 70.6%. Strategy 1 was least costly in 72.6% of simulations. **CONCLUSIONS:** Within the constraints of our model, our analyses suggest that Cyclophosphamide/G-CSF is a reasonable stem cell mobilization strategy in patients with myeloma requiring an ASCT, balancing costs and successful mobilization.

PCN95

BRAF TARGETED THERAPIES FOR THE TREATMENT OF METASTATIC MELANOMA: A COST-EFFECTIVENESS ANALYSIS

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OBJECTIVES: Melanoma is one of the fastest growing cancers worldwide and prognosis is poor with metastases. In about 50% of melanoma patients the $BRAF^{V600}$ protein kinase mutation is present. Two $BRAF^{V600}$ targeted therapies dabrafenib (Tafinlar®) and vemurafenib (Zelboraf®), have recently received U.S. approval to treat metastatic melanoma in $BRAF^{V600}$patients. This study evaluated the cost-effectiveness of BRAF inhibitors compared to traditional chemotherapy (dacarbazine). **METHODS:** A Markov model was developed with three health states: stable disease, progression, and death and taking a lifetime societal perspective. Transition probabilities and clinical outcomes were derived from Phase III trials. Costs were in 2013 USD and derived from literature, national databases, and Medicare fees. Utilities for melanoma and other health states were obtained from studies conducted on the general public. Deterministic and probabilistic sensitivity analyses were run to test the impact of uncertainties. **RESULTS:** Cumulative cost of dacarbazine, dabrafenib and vemurafenib respectively were $15,282, $43,895, and $59,768. Monthly Drug costs were respectively $537, $7,570, and $10,807. Effectiveness of dacarbazine, vemurafenib and dabrafenib were 0.37, 0.5 and 0.52 LY, respectively and quality adjusted were 0.22, 0.35 and 0.39 QALY. The incremental cost-effectiveness ratio was $14,569 per QALY for dabrafenib compared to dacarbazine. Dabrafenib dominated vemurafenib. For sensitivity analysis, 95% of the variance was accounted for by health state utilities and cost of dabrafenib. **CONCLUSIONS:** Dabrafenib is the most cost-effective treatment for metastatic melanoma in patients with $BRAF^{V600}$ mutation given our assumptions. Given the similar QALYs and side effects profile of dabrafenib and vemurafenib, but higher drug cost of vemurafenib, a 25% price reduction for vemurafenib could bring this drug into the cost-effective range. A specific decrease of 63% in utility of progression on dabrafenib or a minimum decrease of 28% for utility of stable disease on dabrafenib is needed to make vemurafenib the most cost-effective option.

PCN96

COST-EFFECTIVENESS OF AFATINIB, ERLOTINIB, AND CISPLATIN/PEMETREXED FOR FIRST-LINE TREATMENT OF METASTATIC EGFR-MUTATION POSITIVE NON-SMALL CELL LUNG CANCER

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OBJECTIVES: To evaluate the cost-effectiveness of afatinib, erlotinib, and cisplatin/pemetrexed chemotherapy, for first-line treatment of metastatic EGFR-mutation positive non-small cell lung cancer (NSCLC). **METHODS:** A Markov model simulated the lifetime progression of EGFR-mutation positive stage IIIB/IV NSCLC patients, under each treatment option, from a US societal perspective. Probabilities, survival rates and health utilities were obtained from clinical trials (LUX-3, LUX-6, EURTAC and OPTIMAL) and published literature. Progression-free and overall survival in the erlotinib trial were adjusted up to account for differences in poorer ECOG performance status compared to the afatinib trial. Costs included those for drugs, progression, and side effects in 2013 USD. Expected QALYS were calculated. The impact of varying parameters on model outcomes was examined using probabilistic sensitivity analyses. **RESULTS:** In the base-case model, treatment with afatinib was least expensive, with lifetime cost of $38,406, followed by cisplatin/pemetrexed ($40,714), and erlotinib ($41,344). Survival was highest with erlotinib (5.27 quality-adjusted life-months saved [QALMS]), followed by afatinib (4.02 QALMS), and cisplatin/pemetrexed (3.51 QALMS). Compared to erlotinib, afatinib had lower monthly drug costs ($5,648 versus $5,853), but higher overall side effects costs ($3,669 versus $1,690). Cisplatin/pemetrexed was dominated by afatinib. Erlotinib was cost-effective compared with afatinib (ICER=$28,210/QALYS). In a model without survival adjustments, afatinib compared with erlotinib had an ICER over the WTP threshold (ICER=$542,745/QALYS), with erlotinib remaining the cost-effective option. Afatinib becomes more cost-effective than erlotinib when its monthly drug cost decreased from $5,648 to below $3,802. **CONCLUSIONS:** Based on our analyses, we recommend erlotinib as the most cost-effective first-line treatment for EGFR-mutation positive NSCLC. Given the potentially similar relative efficacy between afatinib and erlotinib in the clinical trials, cost-effectiveness analysis of afatinib versus erlotinib depends mostly on differences in drug and side-effects costs. Thus, afatinib may need to earn its share of the NSCLC market space with more competitive pricing.

PCN97

COST-EFFECTIVENESS OF ARSENIC TRIOXIDE IN THE TREATMENT OF RELAPSED/REFRACTORY ACUTE PROMYELOCYTIC LYMPHOMA LEUKEMIA IN CANADA

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OBJECTIVES: Acute promyelocytic leukemia (APL) constitutes a rare disease characterized by a high mortality rate at early stage of treatment. Current first-line treatments consist of all-trans retinoic acid (ATRA), anthracyclines and conventional chemotherapy (CT). Although APL has currently a good prognosis, 20 to 30% of patients who achieved remission still relapse and are further resistant to the treatment previously administrated. The objective of this study was to assess, from a Canadian perspective, the economic impact of arsenic trioxide (ATO) compared to ATRA+CT in the treatment of relapsed/refractory APL. **METHODS:** The cost-effectiveness of ATO compared to ATRA+CT in the treatment of relapsed/refractory APL was assessed over a lifetime horizon using a time-dependent Markov model. The model comprises five health states: induction, second remission, treatment failure or relapse, post-failure, and death. The length of each Markov cycle was one month for the first 24 months and one year thereafter. All patients started in the induction state and could move to other health states thereafter, according to the respective efficacy of each treatment. The model also takes into account the incidence of grade 3-4 adverse events reported in clinical trials. Utility or disutility values associated with each health state and adverse events were used to estimate the number of QALYs associated with each treatment. Analyses were conducted from both a Canadian Ministry of Health (MoH) and a societal perspective. **RESULTS:** Compared with ATRA+CT, ATO was associated with incremental cost-effectiveness ratios of $18,380/QALY from a MoH perspective and $20,156/QALY from a societal perspective. Results of the probabilistic sensitivity analysis indicated that ATO remains a cost-effective strategy in 99.96% and 92.45% of the simulations, from a MoH and a societal perspective respectively. **CONCLUSIONS:** This economic evaluation suggests that ATO is a cost-effective strategy compared to ATRA+CT in the treatment of relapsed/refractory APL in Canada.

PCN98

COST-EFFECTIVENESS ANALYSIS OF INNOVATION IN HEMATOLOGIC MALIGNANCIES

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OBJECTIVES: To examine the costs of hematologic malignancies (HMs) in relation to survival gains among Medicare beneficiaries. **METHODS:** Using the Surveillance, Epidemiology, and End Results (SEER)-Medicare datasets, we identified 99,721

Medicare beneficiaries aged ≥66 diagnosed with HM between January 1, 1995 and December 31, 2007, including: acute myeloid leukemia (AML, n=10,173); chronic lymphocytic leukemia (CLL, n=13,743); chronic myelogenous leukemia (CML, n=4,169); Hodgkin lymphoma (HL, n=2,252); non-Hodgkin lymphoma (NHL, n=51,087); and multiple myeloma (MM, n=18,297). We used a discrete hazard model to estimate survival and projected lifetime costs using a generalized linear model with a log-link and gamma distribution. Models were adjusted for year of diagnosis, age, race, gender, and comorbidity. We calculated the incremental cost-effectiveness ratio (ICER, measured in terms of cost per life year [LY]) using cost and survival differences between the earliest (1995-1998) and latest (2005-2007) time periods. Costs were standardized to year 2010 dollars. **RESULTS:** HM survival among Medicare patients increased during the time period studied, though gains varied by diagnosis. Care costs for all diagnoses also increased over time, especially for HL (from $148,000 for individuals diagnosed during 1995-1998 to $230,000 for a 2005-2007 diagnosis) and NHL (from $158,000 for patients diagnosed during 1995-1998 to $247,000 for a 2005-2007 diagnosis). Survival gains were most cost-effective for CML ($37,877/LY) and least cost-effective for HL ($94,859/LY). The ICERs were $43,262/LY for CLL, $59,355/LY for MM, $62,127/LY for NHL, and $83,392/LY for AML. **CONCLUSIONS:** Our findings suggest that over a period of more than a decade, improvements in treatment for HM have been associated with gains in survival, but also with substantial increases in health care costs. Overall, HM therapy innovations appear to provide good value for money among Medicare patients when evaluated using conventional cost-effectiveness metrics.

PCN99

COST-EFFECTIVENESS EVALUATION OF SUNITINIB AS FIRST-LINE TARGETED THERAPY FOR METASTATIC RENAL CELL CARCINOMA IN KAZAKHSTAN

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OBJECTIVES: Sunitinib is one of the first targeted treatments for metastatic renal cell carcinoma (MRCC) and is currently considered as the standard of care for most of the MRCC patients in the first-line setting. Sunitinib delays disease progression, with a median overall survival of more than 2 years, improves quality of life and is becoming the first-line standard of care for MRCC. The introduction of targeted treatments, led to improvements in disease management and survival of these patients, however, with increasing cost. Purpose this reserch - to assess the economic value of sunitinib as first-line therapy in MRCC within the Kazakh health care system. **METHODS:** Cost-effectiveness of sunitinib has been assessed on several occasions and a systematic literature search was conducted to find all published research articles as well as all research abstracts presented in various congresses. An adapted Markov model with a 10-year time horizon was used to analyse the cost effectiveness of sunitinib vs. sorafenib (SFN) and bevacizumab/interferon-α (BEV/IFN) as first-line MRCC therapy from the Kazakh perspective. **RESULTS:** Progression-free survival and overall survival data from sunitinib, SFN and BEV/IFN pivotal trials were extrapolated to project survival and costs in 6-week cycles. Results, in progression-free life-years (PFLY), life years (LY) and quality-adjusted life-years (QALY) gained, expressed as incremental cost-effectiveness ratios (ICER) with costs and benefits discounted annually approximate 3%, were obtained using deterministic and probabilistic analyses. Sunitinib was more effective and less costly than both SFN and BEV/IFN with average cost savings/patients, respectively. Using a willingness-to-pay threshold, sunitinib achieved an incremental net benefit compared with SFN and BEV/IFN, respectively. At this willingness-to-pay, the probability of sunitinib providing the highest incremental net benefit was 72%. **CONCLUSIONS:** Our analysis suggests that sunitinib is a costeffective alternative to other targeted therapies as first-line MRCC therapy in the Kazakh health care setting.

PCN100

COST EFFECTIVENESS ANALYSIS OF ADDING RADIATION THERAPY TO ANDROGEN DEPRIVATION THERAPIES IN MEN WITH LOCALLY ADVANCED PROSTATE CANCER IN THE UNITED STATES

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OBJECTIVES: Whether the addition of radiation therapy (RT) improves overall cost effectiveness in men with locally advanced prostate cancer managed with androgen deprivation therapy (ADT) is still unclear. Our objective was to conduct cost-effectiveness analysis of adding radiation therapy to androgen deprivation therapies in men with locally advanced prostate cancer in the U.S.A. **METHODS:** A decision analysis model was designed to compare adding RT to ADT over a 10 year time horizon with the third party payer's perspective. Probabilities of treatment success, utilization of salvage treatments, and rates of adverse events were taken from published results of SPCG-7/SFUO-3 trial and NCIC CTG PR.3/MRC UK PR07 trial. Cost inputs were based on 2010 Medicare reimbursement rates and reported in 2013 US dollars. Primary outcome measure was incremental cost per biochemical success (i.e. serum PSA level <0.4 ng/ml). 50,000 U.S. dollars were considered willingness to pay threshold. A series of one-way sensitivity analyses and Monte Carlo simulation was performed by testing variations in the range of the 95% confidence interval. **RESULTS:** ART results in a higher biochemical success rate than hormonal therapy with a probability of 0.30 versus 0.21. The mean incremental effect was 0.6 over a 10-year period. Total cost of ART was $25,783 compared with costs in the ADT group of $13,427 per year, the mean incremental cost for ART versus ADT was $8,277 over 10 year period. The mean incremental cost effectiveness ratio was $13758 over 10 year period. Cost-effectiveness acceptability curve analysis resulted in >90% probability that ART with hormonal therapy is cost-effective strategy. **CONCLUSIONS:** Study suggests that adding RT to ADT is cost effective strategy compared to ADT alone based upon the decision analysis model for appropriate men with locally advanced prostate cancer. The study limitations and treatment dosage should be considered before applying the results of the study.

PCN101

THE EFFECT OF HERD IMMUNITY IN DIFFERENT HUMAN PAPILLOMAVIRUS VACCINATION STRATEGIES: AN ECONOMIC EVALUATION OF THE BEST II STUDY

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OBJECTIVES: Italian recommendations for human papillomavirus (HPV) immunization currently consider females only. However, males can be vectors in viral transmission and at risk of infection. The BEST II study was designed to evaluate: the cost-effectiveness (CE) of different interventions targeting females as well as males; and the economic impact of vaccination on a wide range of HPV-induced diseases. **METHODS:** A dynamic Bayesian Markov model was developed to investigate the transmission between sexual partners and the cost-effectiveness of vaccination targeting female and male cohorts in comparison to screening and female cohorts only. A range of HPV-induced diseases was considered (cervical, vaginal, vulvar, anal, head and neck and penile cancer, the associated pre-cancerous stages and anogenital warts). The process of sexual mixing was calculated based on age, gender and sexual behavioural specific matrices to estimate th force of infection dynamically. Increased susceptibility to the virus, associated with early sexual début, a high number of partners, smoking and previous STDs, were included. We considered several scenarios; the baseline assumes universal vaccination to be implemented for 12-year-old females and males. The follow-up period was 55 years. **RESULTS:** According to our preliminary analysis, universal vaccination resulted in incremental CE ratios (ICERs) corresponding to €910 and €5,770, when compared to screening-only and female-only vaccination, respectively. We performed extensive sensitivity analysis, which confirmed the good CE profile of universal vaccination in Italy. **CONCLUSIONS:** A universal HPV vaccination of male and female programme is more cost-effective than screening and female-only vaccination when accounting for all HPV-related diseases. Universal vaccination programme increase herd immunity and provide indirect protection to unvaccinated girls against HPV. The herd immunity plays a significant role in the economic evaluation of HPV immunization programmes. A universal vaccination may be further useful considering that males are both at risk of infection and vectors in viral transmission.

PCN102

COST-EFFECTIVENESS ANALYSIS OF BENDAMUSTINE-RITUXIMAB TREATMENT COMPARED WITH FLUDARABINE-RITUXIMAB TREATMENT, IN PATIENTS WITH INDOLENT NON-HODGKIN'S LYMPHOMA IN COSTA RICA

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OBJECTIVES: To assess the cost-effectiveness of Bendamustine-Rituximab (BR) compared with Fludarabine-Rituximab (FR) treatment, in patients with Indolent Non-Hodgkin's Lymphoma (INHL) that have progressed during or within six months of treatment with Rituximab or a Rituximab-containing Regimen in Costa Rica. **METHODS:** A three-health state cohort simulation Markov Model (progression-free, progressive disease, and death) was developed based on time-dependent progression-free survival and overall survival data. The time frame was lifetime (35 years). The perspective was that of the National Health System of Costa Rica. The health outcomes of interest were Quality Adjusted Life Years (QALYs), Life Years (LYs), and Progression-free Life Years (PFLYs). Resource consumption for health states was elicited with the support of Latin American hematologists. Utilities for health states and disutility for adverse reactions were taken from published studies. All costs and Incremental Cost Effectiveness Ratios (ICERs) are presented in Costa Rican currency (Colones). Costs and outcomes were discounted at 3%. One way and probabilistic sensitivity (PSA) analysis were performed. **RESULTS:** BR resulted in 4,641 QALYs/ 6,432 LYs/ and 3,564 PFLYs, per patient, respectively. FR resulted in 3,557 QALYs/5,138 LYs and 2,047 PFLYs, per patient, respectively. Total costs were: 76.309.813 for BR and 73.045.490 for FR. ICERs were: 3.013.664 per QALY gained, 2.523.307 per LY gained and 2.151.945 per PFLY gained. In all outcomes, results were highly sensitive to Hazard Ratio of overall survival. According to the PSA, with QALYs as outcome, BR had a probability of 63% of being cost effective when considering the threshold of 3 times the Gross Domestic Product per capita (GDPPC) of Costa Rica (14.140.792). **CONCLUSIONS:** BR can be considered very cost-effective compared with FR in the study population (INHL) in Costa Rica, according to the threshold suggested by the World Health Organization [very cost effective below 1 GDPPC (4.713.597)].

PCN103

REANALYSIS OF COST-EFFECTIVENESS OF ABIRATERONE ACETATE AS SECOND LINE TREATMENT FOR METASTATIC CASTRATION-RESISTANT PROSTATE CANCER IN JAPAN USING A JAPANESE CLAIM DATA SET

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OBJECTIVES: The objective of this study is to evaluate cost-effectiveness of abiraterone plus prednisolone compared to prednisolone alone in Japan. We presented the result of the cost-effectiveness analysis of abiraterone acetate in 2013 ISPOR Europe Congress. In the present study we reanalyze the cost-effectiveness of abiraterone by referencing the real world resources using a Japanese claim data set. **METHODS:** Cost-effectiveness analysis was performed using a Markov model based on data from the randomized controlled trial (COU-AA-301 study) and literature review conducted from the public health care payer's perspective. The abiraterone plus prednisolone was compared with prednisolone alone. The base case was assumed to be a 72 year-old man with metastatic castration-resistant prostate cancer (CRCP). The model used a time horizon of 10 years. Outcomes were measured in quality-